

Pesticide Action Network International

Preventing malaria, promoting health: Supporting safe and effective strategies without DDT

Malaria kills one million people a year, with over 80 per cent of the deaths occurring among children in sub-Saharan Africa.¹ Pesticide Action Network (PAN) International and the 147 partner organizations listed below recognize the importance of targets set by African heads of State in April 2000 to halve mortality for Africa's people by 2010.² Our collective work addresses the health and environmental issues that affect the poor and promotes strategies to improve rural livelihoods. We applaud international efforts to mobilize the political will and resources to tackle malaria worldwide, and join others in calling for a redoubling of these initiatives.

Dealing with this debilitating illness requires both curative and preventive strategies. Programs for prevention play a crucial role. Many are currently employed and encompass a range of elements: improved sanitation, water drainage, public education and surveillance of cases in malarial areas, insecticide-treated and long-lasting bed nets, controlling and reducing the mosquito vectors of malaria, selected use of indoor residual spraying, fish predators of mosquito larvae. Integrated vector management, rather than reliance on a single factor, has been fundamental to success, as has the involvement of affected communities.³

The current advocacy for increased use of the organochlorine pesticide dichlorodiphenyltrichloroethane (DDT) for indoor residual spraying is in danger of dominating the debate on prevention strategies, and potentially derailing much needed progress to prevent malaria with the safest and most effective strategies. DDT has been widely banned because of its accumulation to high concentrations in the food chain where it persists in fatty tissues of animals and humans (it can be monitored in human breastmilk), its ability to move from tropical to temperate zones where break down is further delayed, and its association with a number of chronic illnesses.⁴ For these reasons, many governments banned DDT, and addressed its elimination over time in the Stockholm Convention on Persistent Organic Pollutants (POPs).

Scientific research shows that low-level DDT exposure carries elevated risks of adverse chronic health impacts. Studies have identified evidence of human reproductive disorders associated with exposure to DDT and its more harmful break-down chemical dichlorodiphenyldichloroethylene (DDE). These include:

- higher incidence of undescended testes⁵
- poor sperm quality⁶
- premature delivery and reduced infant birth weight⁷
- miscarriage⁸
- reduced breast milk production⁹
- neurological effects, including developmental delays among babies and toddlers exposed to DDT in the womb¹⁰
- elevated risk of breast cancer (while evidence of a link between DDT exposure and breast cancer is ambiguous, the weight of the evidence indicates increased risk)¹¹
- other cancers (the International Agency for Research on Cancer lists DDT as a possible human carcinogen)¹²
- nervous system impacts due to occupational exposure to DDT¹³
- liver impacts due to occupational exposure to DDT¹⁴

Researchers in South Africa and Mexico have found elevated levels of DDT in the blood of people living where DDT was used to control malaria; breast fed children in those areas received

more DDT in their mothers' milk than is considered 'safe' by the World Health Organization (WHO) and the Food and Agricultural Organization of the United Nations.¹⁵ Breastfeeding is an essential safeguard for new-born infants, thus increasing the importance of preventing its contamination. Elevated DDT levels have been found in cows' milk in areas where DDT indoor spraying is used.¹⁶ Some research suggests elevated levels of DDT in water and soil near to DDT spraying for malaria control.¹⁷ The persistence of DDT in the environment increases human exposure

The WHO malaria eradication program of the 1950s and 1960s helped to control malaria in many places, but wiping out malaria with DDT was an unrealistic goal. One of the many reasons for the failure of this ambitious effort was resistance to DDT among malaria-carrying mosquitoes. Taking into account that resistance arose largely from agricultural use and cross-resistance to pyrethroid insecticides, by 1972 19 species of mosquitoes were resistant to DDT in Africa.¹⁸ Resistance will continue to be a problem.

Often DDT intended for public health use is diverted to illegal agricultural use, carrying greater danger for human exposure than indoor residual spraying, and hastening the development of resistant mosquito populations.¹⁹ New DDT use adds to exposure from old stockpiles that are not properly contained or controlled. The Food and Agriculture Organisation of the United Nations estimates there are more than 100,000 tons of obsolete pesticide stockpiles in Africa, mostly older chemicals such as DDT.²⁰

New demands for DDT use for malaria control also increase the burden on the communities living near production plants. A DDT factory in the Eloor-Edayar region in India has a long record of contaminating the environment, including rivers. The local community is now protesting their poisoning as a result of emissions from this factory.²¹

More effective and safer approaches to malaria control are now being used in many countries. Since 2000 Mexico eliminated the need for DDT and significantly reduced the incidence of malaria. After collecting entomological and epidemiological data to characterize the behavioural patterns of mosquitoes and their interaction with people, a strategy was implemented that combines three main elements:

- a) primary health care to eliminate parasites in people with a new single dose treatment regimen of prophylaxis drugs administered only to the detected positive malaria cases
- b) improvement of personal and household hygiene
- c) use of environmental management practices to eliminate mosquito breeding sites

This systematic approach has reduced costs, and in some areas negated the need for indoor application of pyrethroid insecticides. Community participation is a key element: health workers and trained volunteers diagnose cases of malaria and administer curative treatment; local efforts eliminate mosquito larvae through the cleanup of algae and trash from rivers and streams; and education has improved hygienic conditions in the home.²² The success is a result of cooperative efforts under the North America Regional Action Plan from the Commission for Environmental Cooperation (CEC).²³

A program in the central region of Kenya is successfully focusing on reducing malaria by working with the rice-growing community to improve water management, use livestock as bait, introduce biological controls and distribute mosquito nets in affected areas.²⁴ Vietnam reduced malaria deaths by 97% and malaria cases by 59% when they switched in 1991 from trying to eradicate malaria using DDT to a DDT-free malaria control program involving distribution of drugs and mosquito nets along with widespread health education organized with village leaders.²⁵ The World Wildlife Fund has documented success in the Kheda district in India, where non-chemical approaches were demonstrated to be cost-effective.²⁶ In the Philippines, the national program phased out and eventually banned DDT with no increase in the incidence of malaria.²⁷ The program owed its success primarily to investment in communities to assist their participation in the strategies adopted.

What countries fighting malaria need is strong support for effective solutions that invest in health, education and appropriate technologies, and improve community resources to participate in malaria control programs. Communities facing the scourge of malaria, which disproportionately affects poor and under-nourished areas, should not have to face the significant long-term health risks posed by exposure to DDT. The mobilization of resources for prevention activities by the international community must focus on solutions that meet international standards and do not pose new risks.

PAN International and the undersigned groups strongly support the Stockholm Convention on Persistent Organic Pollutants' call for elimination of DDT, allowing only use for disease vector control of this persistent and bioaccumulative pesticide, with a review every three years, in the countries where 'locally safe, effective and affordable alternatives are not available'. The 144 governments around the world that are Parties to the Stockholm Convention have endorsed this approach.

We call on all responsible members of the international community – and particularly those governments who are Parties to the Stockholm Convention – to actively promote safe and effective malaria control solutions that protect children and families around the world.

30 April 2007

Pesticide Action Network Regional Coordinators

Abou Thiam, PAN Africa

BP 15938, Dakar-Fann, Senegal panafrica@pan-afrique.org

Sarojeni Rengam, PAN Asia and the Pacific

PO Box 1170, 10850 Penang, Malaysia panap@panap.net

Carina Weber, PAN Europe

C/o. PAN Germany, Nernstweg 32, 22765 Hamburg, Germany info@pan-germany.org, sofia-paneurope@pan-uk.org

Elsa Nivia, PAN Latin America

Av. Providencia N°365, depto. N°41, Providencia, Santiago de Chile rapal@rapal.cl

Monica Moore, PAN North America

49 Powell Street, 5th Floor, San Francisco, CA 94102, US PANNA@PANNA.org

Sign-ons:

Africa

Paul Soake, Director, Physicians for Social Responsibility, Kenya, psaoke@isde.org

Robert Tumwesigye Baganda, Coordinator, Pro-biodiversity, Conservationists in Uganda, Uganda, tumwesigyeus@yahoo.com

Ellady Muyambi, General Secretary, Uganda Network on Toxic Free Malaria Control (UNTFMC), Uganda, elladmuyambi@yahoo.com

Yahya Khamis Msangi, Head Department, Occupational Health, Safety & Environment, Tanzania Plantation and Agricultural Workers Union, Tanzania, tpawu@raha.com, aishamaulid@hotmail.com

M. Ebeh Adayade Kodjo, Executive Director, Alliance Nationale des Consommateurs et de l'Environnement ANCE-Togo/ Pesticide Action Network Togo (PAN Togo), Togo, ebenh@globalink.org / ebenh@univ-lome.tg

Josphat Ngonyo, Director, Africa Network for Animal Welfare, Kenya, josh@anaw.org

Simplice Davo Vodouhe, Coordinator, Organisation Béninoise pour la Promotion de l'Agriculture Biologique (OBEPAB), Benin, obepab@intnet.bj

Crispin K. Kaposhi, Integrated Pest Management and Pesticide Toxicology Consultant and PAN Africa Project Officer, Zambia, ckmkaposhi@yahoo.co.uk

Rachel Kamande, Programmes Coordinator, iLima Kenya, Kenya, ilimakenya@care2.com

Omara Amuko, Health, Safety and Environment Coordinator, International Union of Food, Agricultural, Hotel, Restaurant, Catering, Tobacco and Allied Workers' Associations.(IUF), Uganda, Omara12@yahoo.com

Yoka Albert, President, L'Association de lutte pour la Protection de l'Environnement et de la Promotion de l'Agriculture Biologique (ALPEPAB),ALPEPAB, Brazzaville, Republic of Congo, alpepab_ong@yahoo.fr , yokalefoko@yahoo.fr

Kiama Kaara, Deputy Coordinator, Kenya Debt Relief Network (KENDREN), kiamak@yahoo.com

Almoustapha M. MAIGA, ONG ODI-Sahel, Mali, almoustapham@hotmail.com

Dr. Mohamed El Banna, Director of Arab HUB for NGOs, Day Hospital institute, Egypt, mbanna@starnet.com.eg

Silvani Mng'anya, Senior Programme Officer, AGENDA, Tanzania, Sagenda@bol.co.tz

Dereje G. Michael, Deputy Director, Institute for Sustainable Development, Ethiopia, isdbios@ethionet.et

Mr. Isuf SIDIBÉ SÓ, Secrétaire des Relations Externes et Partenariats, Association du Consommateur de Biens et Services (ACOBES) Bissau, Guinée-Bissau, iss107@hotmail.com, acobes_6@yahoo.com.br

Abiye Alemu Ayele, Chairman, Safe Environment Association – Ethiopia, Ethiopia, segpan@ethionet.et

Yalemtsehay Mekonnen, Associate Professor of Human Physiology, Addis Ababa University, Ethiopia, yalemtsehay@yahoo.com

Ahmed Jaafari,Ingénieur d'Etat Principal,Association d'Education Environnementale et de Protection des Oiseaux au Maroc (SEEPOM) du Maroc, Morocco, seepomorocco@yahoo.fr

Kimbowe Richard, Programme Manager, Uganda Coalition for Sustainable Development (UCSD), Uganda, ugandacoalition@infocom.co.ug

Anabela Lemos and Daniel Ribeiro, Director and Program officer, JA! Justica Ambiental, Mozambique, ja_ngo@yhao.co.uk

Katereggga Dennis, Executive Director, Youth Watch, Uganda, katereggadennis@yahoo.com

Frederick A Kouwoaye Consultant in Organic Agriculture & Environment, Togo, fablamk@yahoo.fr

Lovemore Simwanda, Technical Advisor, Environmental Conservation Association of Zambia, Zambia, l.simwanda@yahoo.co.uk

Diallo Abdoulaye, Chargé de programme, Association Malienne pour la Conservation de la Faune et de l'Environnement AMCFE, Mali, amcfe@afribone.net.ml

Tiemoko Souleymane Sangare, Directeur Exécutif, Fondation pour le Développement du Sahel FDS, Mali, fds@afribone.net.ml

Abdelmalek Boutaleb Joutei , Président, WEDFOCUS, Maroc, Boutaleg10@yahoo.fr

Abdelmadi Bennis, Coordinateur National, Association Ribat Al Fath pour le Développement Durable, Maroc, bennishadi@yahoo.fr

Abderrahim Riad , Président, Association des Acteurs Qualifiés du Développement Rural, Maroc, Nature62ma@yahoo.fr

Mohamed Kamal, Président, ONG ANOR Senior Expert Association, Maroc, Kamal.mh@gmail.com

Anosike Vide, Executive Director, Gender research and Development Centre, Nigeria, gerdecnigeria@yahoo.com

C. Chike Chikwendu, General Secretary, Friend of Environment, Nigeria, C_chikwendu@hotmail.com

Comfort Hassan, Programme Officer, Nigerian Environmental Study, Nigeria, info@nestinteractive.org

Ane Leslie Adogame, Executive Secretary/National Coordinator , Nigerian Environmental Society (NES) Nigerian ASP Implementation Network(NASPIN), Nigeria, Ane_adogame@hotmail.com, Environ_nes@yahoo.com, asp.tnet@yahoo.com

Lucas Wambura, General Secretary, Lake NYANZA Environmental and Sanitation Organisation (LANESO), Tanzania, lucaswambura@yahoo.com

Judica Losai, Member of JET (Journalist), Journalist Environmental Association, Tanzania, ndasat@yahoo.com

Tarek Fezzani, Vice President, TENMYA 21, Tunisia, Tarek.fezzani@topnet.tn

Saed Sboui, Vice President, APNEK, Tunisia, Essayed777@yahoo.fr

Tadesse Amara, Coordinator, Ethiopian NGOs ASP, Ethiopia, Atadesse2002@yahoo.com

Ayele Kebede, Deputy Coordinator, Forum for Environment, Ethiopia, ayeleke@yahoo.com

Argaw Ashine, Coordinator, Journalist and Media PANOS, Ethiopia, panosmedia@yahoo.com

Musa Chamane, Coordinator, Ground Work, South Africa, musa@groundwork.org.za

Dr. Mandla Buthelezi, 1st Vice President, National African Farmers Union of SA (NAFUSA), South Africa, nafukzn@yahoo.com

Mark Wells Twit, TWIG, South Africa, mark@twig.org.za

Michael Musenga, Senior Environmental Health Officer, Livingstone City Council, Zambia, mmusenga@yahoo.com

Dr Benlarabi Sanaa, physician, Centre anti poison du Maroc, Morocco, benlarabisanaa@yahoo.fr

Asia

Nug Win, FIELD Indonesia (The Field Alliance), Indonesia, nugie63@yahoo.com

Balram Banskota, Secretary, All Nepal Peasants' Association, Nepal, anpa@mail.com.np

Ravi Agarwal, Director, Toxic Link, India, ravigl@toxicslink.org

Dato' Anwar Fazal, Director, Citizens International, Malaysia, anwarfazal2004@yahoo.com

Mr Shahid Zia, Chairman, Lok Sanjh Foundation, Pakistan, lok_sanjh@yahoo.com

Ms. Kim Jai Ok, President, Consumers Korea, Korea, jokim@consumerskorea.org

Mika Iba, Director, NESSFE, Japan, mika.iba@gmail.com

Papiya Sarkar, Consultant, Janhit Foundation, India, papiya.sarkar@gmail.com

Mr. Ramon Bultron, Managing Director, ASIA PACIFIC MISSION FOR MIGRANTS, Hong Kong SAR, apmm@hknet.com, rbultron@gmail.com

Penchom Saetang, Coordinator, Campaign for Alternative Industry Network (CAIN), Thailand, cain@access.inet.co.th

R.Vimala, Coordinator, Tamil Nadu Women's Forum, India, burnad@md3.vsnl.net.in, tnwforum@gmail.com

Burnad Fatima.N., President, Society for Rural Education and Development, India, burnad@md3.vsnl.net.in

Dr. Mahmood A. Khwaja, Visiting Research Fellow, Sustainable Development Policy Institute (SDPI), Pakistan, khwaja@sdpi.org; m.a.khwaja@gmail.com

Manny C. Calanzo, Co-Coordinator, Global Alliance for Incinerator Alternatives (GAIA), Philippines, mannyc@no-burn.org

Magimai, Coordinator, Tamil Nadu Dalit Women's Movement, India, burnad@md3.vsnl.net.in

Venkat, Coordinator, Alliance of People's Movement, India, burnad@md3.vsnl.net.in

Dr. Irene Fernandez, Director, TENAGANITA, MALAYSIA, tenaganita@yahoo.co.uk

Mr S.M. Mohamed Idris, President, Consumers Association of Penang (CAP), Malaysia, idrismd@tm.net.my

Sridhar R, Coordinator, Thanal, India, thanal@vsnl.com

Mao Zhongshun, Program officer; Angie Zhou, Information officer; Liu Zhihong, Research assistant; Yang Song, Bt cotton officer, Pesticide Eco-Alternatives Center, China, zhongshunmao@gmail.com, zhou.jiuxuan@gmail.com, liuzhihong0602@gmail.com, peacyangsong@gmail.com

Sasanka Dev, General Secretary, Developing Initiatives for Social and Human Action (DISHA), India, fordisha@cal2.vsnl.net.in

G.Urantsooj, chairperson, Centre for Human Rights and Development, Mongolia, chrd@mongolnet.mn

S. A. Anjalis. President. Human Rights Lawyers Association, India, angelhrli@yahoo.co.in, Susigels@yahoo.com

Dr Meriel Watts, Co-ordinator, Pesticide Action Network Aotearoa New Zealand, merielwatts@xtra.co.nz

Latin America

Lilian Corra, President, International Society of Doctors for the Environment, ISDE, and the Asociacion Argentina de Medicos por el Medio Ambiente, AAMMA, Argentina, lcisde@arnet.com.ar

Maria Hamlin Zuniga, Director, Center for Information and Advisory Services in Health, Managua, Nicaragua, maria@mundonica.com

Catharina Wesseling MD, PhD, Coordinator Health Section, Central American Institute for Studies on Toxic Substances, Universidad Nacional, Costa Rica, cwesseli@una.ac.cr

Maria Eugenia Gil Beroes, Fundacion Aguaclara, Venezuela, fundacionaguaclara@cantv.net

Mauricio Sermeño, Unidad Ecológica Salvadoreña UNES, RAPAL, El Salvador, mauricio.sermeno@unes.org.sv

Fernando Bejarano G, General Coordinator, Red de Accion sobre Plaguicidas y Alternativas en Mexico (RAPAM) member of RAPAL and IPEN, Mexico, rapam@prodigy.net.mx

María Isabel Cárcamo, Cordinadora de RAPAL Uruguay, RAPAL - IPEN, Uruguay, rapaluy@chasque.net

Larisa de Orbe, Directora, Acción Ecológica A.C.. México. larisadeorbe@accionecologica.org.mx

Angel Torres, Director, Desarrollo Integral Autogestionario A. C., Mexico. arcangel1946@hotmail.com

Javier Souza, National Coordinator RAP-AL Argentina, Centro de Estudios sobre Tecnologías Apropriadas de la Argentina, Argentina, javierrapal@yahoo.com.ar

Tania Santiváñez, National Coordinator RAP-AL Bolivia, Centro de Estudios e Investigaciones en Impactos Socioambientales, CEIISA, Bolivia, ceiisa@entelnet.bo

Jaime Miguel Weber, National Coordinator RAP-AL Brazil, Centro de Apoio ao Pequeno Agricultor (CAPA), Brazil, jaime@viavale.com.br

Maria Elena Rozas, Coordinadora Subregional Cono Sur, Alianza por una Mejor Calidad de Vida, Chile, rapalchile@rapal.cl

Fernando Ramírez, Mesoamerica and the Caribbean, and National Coordinator RAP-AL Costa Rica, Instituto Regional de Estudios en Sustancias Tóxicas de la Universidad (IRET-UNA), Costa Rica, framirez@una.ac.cr

Nilda Pérez, National Coordinator RAP-AL Cuba, Centro de Estudios de Agricultura Sostenible y Extensión (CEASE), Universidad Agraria de La Habana, Cuba, nilda.perez@infomed.sld.cu

Mónica Trujillo, National Coordinator RAP-AL Ecuador, Accion Ecologica, Ecuador, rapal-ec@accionecologica.org

Marco Tulio Madrid, National Coordinator RAP-AL Honduras, Educación Comunitaria para la Salud, EDUCSA, Honduras, educsan@yahoo.com

Gustavo Adolfo Ruiz, National Coordinator RAP-AL Nicaragua, Grupo de Promoción de Agricultura Ecológica, GPAE, Nicaragua, rapal_ni@turbonett.com.ni

Raúl Carranza, National Coordinator RAP-AL Panamá, Centro de Estudios de Recursos Bióticos, CEREB, Universidad de Panamá, Panamá, cereb@ancon.up.ac.pa

Hebe Raquel González, National Coordinator RAP-AL, Altervida, Paraguay, comercial@altervida.org.py

Luis Gomero, National Coordinator RAP-AL Perú, Red de Acción y Alternativas al uso de Agroquímicos (RAAA), Peru, lgomero@raaa.org

Andrea Brechelt, Nacional Coordinator RAP-AL, Fundación Agricultura y Medio Ambiente (FAMA), Dominican Republic, fama_rapal2006@yahoo.com

Patricia Gutiérrez, National Coordinator RAP-AL Venezuela, Red de Accion sobre Plaguicidas y Alternativas, Venezuela, pcutierrezu@gmail.com

Sandra Martínez Contreras, Red Fronteriza de Salud y Ambiente, A.C., Coordinadora Ejecutiva, México, lared@redfronteriza.org

Maite Cortés García Lozano, Colectivo Ecologista Jalisco, Mexico

Jaqueline García, Posición: Investigador, CIAD A.C., Mexico, Jaqueline@ciad.mx

María Teresa Guerrero, Directora, Consultoría Técnica Comunitaria A.C., México, kwiraa@prodigy.net.mx

Marisa Jacott, Greenpeace México, Mexico, marisa.jacott@mx.greenpeace.org

Tania Santibáñez, Directora de Centro de Estudios e Investigacion en Impactos Socioambientales (CEIISA), Bolivia, ceiisa@ceibo.entelnet.bo

Europe

Professor C Vyvyan Howard, MB. ChB. PhD. FRCPATH, President elect, International Society of Doctors for the Environment and Bioimaging Research Group, Centre for Molecular Bioscience, University of Ulster, v.howard@ulster.ac.uk

Lorenzo Tomatis, M.D., International Society of Doctors for the Environment, Italy, ltomatis@hotmail.com

Hanns Moshhammer MD, Austrian Doctors for the Environment (AeGU, ISDE Austria): AerztInnen fuer eine gesunde Umwelt Vienna, Austria, hanns.moshhammer@utanet.at

Genon K. Jensen, Executive Director, Health and Environment Alliance (HEAL) [formerly EPHA Environment Network (EEN)], Belgium, genon@env-health.org

Heike Schmitt, Assistant Professor, Utrecht University, The Netherlands

Jutta Mehnert, PAN Germany EV, Germany, mehnert@bremer-umweltinstitut.de

Dipl.-Ing. agr. Susan Haffmans, Project Coordinator; Dr Matthias Frost, Pesticide Action Network Germany, susan.haffmans@pan-germany.org and Matthias.Frost@pan-germany.org

Linda Craig, Director, Pesticide Action Network UK, UK, lindacraig@pan-uk.org

François Meienberg. Campaign Director, Berne Declaration, Switzerland, food@evb.ch

Simone Hueber, Switzerland, simone.hueber@gmx.de

Peter Kaelin, President, 'Ärztinnen und Ärzte für Umweltschutz', Switzerland, petermkaelin@freesurf.ch

Patricia Cameron, Chemikalienpolitik und Nanotechnologie (Chemicals Policy and Nanotechnology), Bund für Umwelt und Naturschutz Deutschland (BUND) (Friends of the Earth Germany), Germany, patricia.cameron@bund.net

Ingolf Spickschen, Lawyer, Friends of the Earth Germany, Greenpeace (former Head of Department, Federal Ministry for Internal Affairs and Environmental Protection, Germany, pruzz.2000@t-online.de

Hans Moshhammer, President, International Society of Doctors for the Environment Austria, hanns.moshhammer@meduniwien.ac.at

Grazia Cioci, Campaign Coordinator, Pesticide Action Network Europe, grazia.cioci@gmail.com

Susana Fonseca, Researcher, Portugal, susanafonseca@quercus.pt

Mário Quaresma, Manager, Portugal, urubu@iol.pt

António Eloy, University Professor, consultant, Portugal, buho@oniduo.pt

András Lukács, President, Clean Air Action Group, Hungary, lukacs@levegő.hu

Carla Janeiro, Engineer, CEAI - Centro de Estudos da Avifauna Ibérica, Portugal, janeiro.c@gmail.com

Walter Gomes, Portugal, walter_gomes_@hotmail.com

Dr Tomica Anceviski, President, MADE- Macedonian Association of Doctors for the Environment, Republic of Macedonia, mademkd@mt.net.mk

Eugenyi Lobanov, Toxics campaigner, Foundation for the Realisation of Ideas, Belarus, lobanow@yahoo.coms

Christine Ellermann, Director, Bundesverband Bürgerinitiativen Umweltschutz (BBU) e.V., Germany, BBU-Bonn@t-online.de

Lúcia Fernandes, Phd Student, Portugal, luciaof@gmail.com

Daniel Lesinsky, Director, CEPTA - Centre for Sustainable Alternatives, Slovakia, lesinsky@changenet.sk

Peter Mortier, Coordinator, Bral- Conseil Bruxellois pour l'Environnement, peter@bralvzw.be

Bruno Milanez, researcher, Brasil, brunomilanez@ensp.fiocruz.br

Alexandra Kordecka, Senior Chemicals Campaigner, Friends of the Earth

Europe, aleksandra.kordecka@foeeurope.org

Paula Silva, Secretary of the National Direction Board, Quercus ANCEN, Portugal, paulasilva@quercusancn.org

North America

Peter Orris, MD, MPH Professor and Director, Global Toxics Policy Project, University of Illinois at Chicago School of Public Health, USA, porris@uic.edu

Joseph DiGangi, PhD, Scientist, Environmental Health Fund, USA, digangi@environmentalhealthfund.org

Erik Jansson, President, Department of the Planet Earth, Washington, Washington DC, USA, planetearth@erols.com

Jackie Lombardo, Friends and Advocates for Children, Teachers and Schools, USA, ucanmailjackie@yahoo.com

Jack Weinberg, Environmental Health Fund, Global Chemical Safety Program Director, USA, jackwein@uic.edu

Michael Gregory, Director, Arizona Toxics Information, USA, aztoxics@mindspring.com

Jeff Conant, Environmental Justice Circle Coordinator, Peoples Health Movement, USA jeff@hesperian.org

Citizens Environmental Coalition, New York, USA

Peter Galvin and Jeff Miller, Center for Biological Diversity, USA

Susan Junfish, Director, Parents for a Safer Environment, USA

Ruth Rosenbaum, TC, PhD, Executive Director, Center for Reflection, Education and Action, Inc., USA

Dave Henson, Executive Director, Occidental Arts and Ecology Center USA

Wenonah Hauter, Executive Director, Food & Water Watch, USA

Bill Newton, Executive Director, Florida Consumer Action Network

Robina Suwol, Executive Director, California Safe Schools

Joshua Karliner, International Team Coordinator, Health Care Without Harm, josh@hcwh.org

References

1. Bradley, D.J. The particular and the general. Issues of specificity and verticality in the history of malaria control. *Parassitologia* 40: 5-10, 1998.
2. Roll Back Malaria. *The Abuja Declaration and the Plan of Action. An Extract from The African Summit on Roll Back Malaria*, Abuja, 25 April 2000 (WHO/CDS/RBM/2000.17) http://www.rbm.who.int/docs/abuja_declaration_final.htm
3. Morner, J., R. Bos and M. Fredrix. *Reducing and eliminating the use of persistent organic pesticides: Guidance on alternative strategies for sustainable pest and vector management*. Inter-organization Program for the Sound Management of Chemicals. Geneva, 2002; and
- Shiff, Clive. Integrated approach to malaria control. *Clinical Microbiology Reviews*. V. 15, No. 2. April, 2002. p 278-93.
4. DDT is classified as "reasonably anticipated to be a human carcinogen" *Ninth Report on Carcinogens* U.S. Department of

Health and Human Services, Public Health Service, National Toxicology Program, January 2001 available at <http://ehis.niehs.nih.gov/roc/ninth/rahc/ddt.pdf>; DDT falls into Group 2B (“possibly carcinogenic to humans”) under the IARC Carcinogenicity Classification scheme in Overall Evaluations of Carcinogenicity to Humans, compiled from IARC Monographs Vol. 1-79, available online at <http://193.51.164.11/monoeval/crthall.html>; and Agency for Toxic Substances and Disease Registry. *Toxicological Profile for DDT, DDE, DDD: Draft for Public Comment*, Atlanta, GA: Agency for Toxic Substances and Disease Registry, September 2000. <http://atsdr1.atsdr.cdc.gov/toxprofiles/tp35.html>; and

Orris, Peter, Lin Kaatz Charsy, Karen Perry and Joe Asbury, 2000. *Persistent Organic Pollutants and Human Health* (World Federation of Public Health Associations, USA). May; and

Eskenazi, Brenda PhD et al. In Utero Exposure to Dichlorodiphenyltrichloroethane (DDT); and Dichlorodiphenyldichloroethylene (DDE) and Neurodevelopment Among Young Mexican American Children” *Pediatrics* Vol 118, No. 1, July 2006; and

BC Gladen and WJ Rogan, DDE and Shortened Duration of Lactation in a Northern Mexican Town, *Am J PublicHealth* 85(1995): 504-08; and

Longnecker, MP, MA Klebanoff, H Zhou, JW Brock, Association between maternal serum concentration of the DDT metabolite DDE and preterm and small-for-gestational age babies at birth, *The Lancet*, vol. 358: 110-114 (2001); and

Rogan, Walter & Aimin Chen, Health Risks and Benefits of bi (4-chlorophenyl) 1,1,1-trichloroethane (DDT). *Lancet* 2005. 366: 763-73.

5. Longnecker, MP, MA Klebanoff, JW Brock, H Zhou, KA Gray, LL Needham and AJ Wilcox. Maternal serum level of 1,1-Dichloro-2,2-bis (p-chlorophenyl) ethylene and risk of cryptorchidism, hypospadias, and polythelia among male offspring. *American Journal of Epidemiology* Vol. 155, No. 4 : 313-322.

6. Aneck-Hahn N.H., Schulenburg G. W., Bornman M. S., Farias P., and de Jager C., Impaired semen quality associated with environmental DDT exposure in young men living in a malaria area in the Limpopo Province, South Africa, *Journal of Andrology* 2006, DOI:10.2164/jandrol.106.001701; and

Hauser R., Altshul L., Chen Z., Ryan L., Overstreet J., Schiff I., and Christiani D.C., Environmental Organochlorines and Semen Quality: results of a pilot study, *Environ Health Perspect.* 2002 March; 110(3): 229–233.

7. Longnecker, M. P., M. A. Klebanoff, H. Zhou, J. W. Brock. Association between maternal serum concentration of the DDT metabolite DDE and pre-term and small-for-gestational-age babies at birth. *The Lancet* 2001; 358: 110-114.

8. Altshul, L., C. Chen, L. Fu, W.Guang, A. Huang , S. Korrick, M. Perry, S. A. Venners, X. Wang, and X. Xu. Preconception Serum DDT and Pregnancy Loss: A Prospective Study Using a Biomarker of Pregnancy. *American Journal of Epidemiology Advance Access.* August 2005. Vol. 162, No. 8.

9. Rogan, W. J.; Gladen, B. C.; McKinney, J. D.; Carreras, N.; Hardy, P.; Thullen, J.; Tingelstad, J., and Tully, M. Polychlorinated biphenyls (PCBs) and dichlorodiphenyl dichloroethene (DDE) in human milk: Effects on growth, morbidity, and duration of lactation. *American Journal of Public Health.* 1987; 77(10):1294-1297; and

Gladen, B. C. and Rogan, W. J. DDE and shortened duration of lactation in a northern Mexican town. *American Journal of Public Health.* 1995; 85(4):504-508.

10. Eskenazi, B., Marks A. R., Bradman A., Fenster L., Johnson C., Barr D. B. and Jewell N. P. In Utero Exposure to Dichlorodiphenyltrichloroethane (DDT) and Dichlorodiphenyldichloroethylene (DDE) and Neurodevelopment Among Young Mexican American Children, *Pediatrics*, 2006;118;233-241.

11. Dees C, Askari M, Foster JS, Ahamed S, Wimalasena J. 1997. DDT mimics estradiol stimulation of breast cancer cells to enter the cell cycle. *Mol Carcinog* 18(2):107-14; and

Li JY, Wu DS, Yang F, Zeng HY, Lei FM, Zhou WD, Li H, Tao P. 2006a. [Study on serum organochlorines pesticides (DDTs) level, CYP1A1 genetic polymorphism and risk of breast cancer: a case control study.] [English abstract - article in Chinese]. *Zhonghua Liu Xing Bing Xue Za Zhi* 27(3):217-22; and

Schechter A, Toniolo P, Dai LC, Thuy LT, Wolff MS. 1997. Blood levels of DDT and breast cancer risk among women living in the north of Vietnam. *Arch Environ Contam Toxicol* 33(4):453–456; and

van’t Veer P, Lobbezoo IE, Marin-Moreno JM, Guallar E, Gomez-Aracena J, Kardinaal AFM, Kohlmeier L, Martin BC, Strain JJ, Thamm M, van Zoonen P, Baumann BA, Huttunen JK, Kok FJ. 1997. DDT (dicophane) and postmenopausal breast cancer in Europe: case-control study. *Br Med J* 315:81-85; and

Zheng T, Holford TR, Mayne ST, Ward B, Carter D, Owens PH, Dubrow R, Zahm SH, Boyle P, Archibeque S, Tessari J. 1999a. DDE and DDT in breast adipose tissue and risk of female breast cancer. *Am J Epidemiol* 150(5):453–458.

12. International Agency for Research on Cancer (IARC). DDT and Associated Compounds (Group 2B)- Summaries & Evaluations, Vol.: 53 (1991) (p. 179), <http://www.inchem.org/documents/iarc/vol53/04-ddt.html>

13. van Wendel de Joode B, Wesseling C, Kromhout H, Monge P, Garcia M, Mergler D. Chronic nervous system effects of long-term occupational exposure to DDT. *Lancet* 2001 Mar 31; 357(9261): 1014-16.

14. Bouwman, H.; Cooppan, R. M.; Botha, M. J., and Becker, P. J. Serum levels of DDT and liver function of malaria control personnel. *S Afr Med J.* 1991; 79(6):326-329. ISSN: 0038-2469.

15. Bouwman, H. DDT levels in serum, breast-milk and infants in various populations in malaria and non-malaria controlled areas of KwaZulu. *Medical Research Council.* 1991:1-38; and

Bouwman, H., Becker, P. J., Cooppan, R. M. and Reinecke, A. J. Transfer of DDT used in malaria control to infants via breast milk. *Bulletin of the World Health Organization.* 1992; 70(2):241-50. ISSN: 0042-9686; and

Gladen, B. C. and Rogan, W. J. DDE and shortened duration of lactation in a northern Mexican town. *American Journal of Public Health.* 1995; 85(4):504-508.

16. Pardo VT, Waliszewski KN, Landin LA, Bautista RG. Organochlorine pesticide residues in cow's milk from a tropical

-
- region of Mexico. *Food Addit Contam.* 2003 Mar;20(3):259-69; and Waliszewski SM, Villalobos-Pietrini R, Gomez-Arroyo S, Infanzon RM, Persistent organochlorine pesticide levels in cow's milk samples from tropical regions of Mexico. *Food Addit Contam.* 2003 Mar;20(3):270-5.
17. Dua V.K., Pant C.S., Sharma V.P., Determination of levels of HCH and DDT in soil, water and whole blood from bioenvironmental and insecticide-sprayed areas of malaria control. *Indian J Malariology* 33:7-15, 1996.
18. EXXONSecrets.org. <http://www.exxonsecrets.org/html/personfactsheet.php?id=1038>
19. Biscoe M. L., Mutero C.M., and Kramer R. A. Current Policy and Status of DDT Use for Malaria Control in Ethiopia, Uganda, Kenya and South Africa, International Water Management Institute, 2004.
20. Food and Agriculture Organization of the UN (FAO). *Baseline Study on the Problem of Obsolete Pesticide Stocks*. FAO Pesticide Disposal Series, No.9. 2001. See http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/003/X8639E/X8639E00.HTM
21. Suchitra, M. Unchecked pollution on the Periyar. *India Together*. March 9, 2007. <http://www.indiatogether.org/2004/mar/env-periyar.htm>; and The Hindu, *Greenpeace pulls up Hindustan Insecticides for DDT pollution*, Business Line, December 17, 2003. <http://www.thehindubusinessline.com/2003/12/17/stories/2003121701481700.htm>
22. Chanon, E.K., Mendez-Galván, J.F., Galindo-Jaramillo, J., Olguín-Bernal H., Borja-Aburto V.H., Cooperative Actions to achieve malaria control without the use of DDT. *Int. J. Hyg. Environ. Health* 206, 387-394 (2003); and Bejarano-González, F., The Phasing Out of DDT in Mexico, *Pesticide Safety News*, 2001 Milan, Italy, International Center for Pesticide Safety, vol. 5, num. 2, 2001, p.5; and Bejarano González, F., *Participación ciudadana y alternativas al DDT para el control de la malaria. Memorias*. RAPAM. World Wildlife Fund. Julio 1998. Texcoco, México; and Bejarano González, F., *Situación actual de la malaria y uso del DDT in Mexico*. Centro Nacional de Salud Ambiental. Centro de Vigilancia Epidemiológica. Secretaría de Salud. Diciembre 2000.
23. A GEF project has been developed to phase-out DDT and reduce the long term effects of exposure in Mexico and Central America with the support of the CEC, Pan American Health Organization (PAHO) and UNEP.
24. International Development Research Center. *Malaria and Agriculture in Kenya: A New Perspective with Links between Health and Ecosystems*. Case Study: Health and Ecosystem Approach. 2003. See http://www.idrc.ca/uploads/user-S/10530071320Ecohealth_2_Kenya_e.pdf
25. World Health Organization. *A Story to be Shared: The Successful Fight Against Malaria in Vietnam*. 2000. See <http://www.afronets.org/files/malaria.pdf>
26. NAMP, DGHS, Govt. of India: Malaria and its Control in India – Country Scenario, 1999.
27. Matteson P.C., The Philippine National Malaria Control Program, in P.C. Matteson, ed. *Disease Vector Management for Public Health and Conservation*, Washington, DC: World Wildlife Fund, 1998.